GOVERNMENT OF INDIA
NON-CONVENTIONAL ENERGY SOURCES
LOK SABHA

STARRED QUESTION NO:276
ANSWERED ON:07.08.2003
EXPLOITATION OF NON-CONVENTIONAL ENERGY SOURCES
ARUN KUMAR

Will the Minister of NON-CONVENTIONAL ENERGY SOURCES be pleased to state:

(a) whether there is scope for exploitation of non-conventional energy sources in the various parts of the country;

(b) if so, the details thereof, State-wise;

(c) the names of the States where there is optimum exploitation of non-conventional energy; and

(d) the steps taken by the Government for encouraging people to utilize the same?

Answer

MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES (SHRI M. KANNAPPAN)

(a), (b), (c) & (d) : A Statement is laid on the Table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (a), (b), (c) & (d) OF LOK SABHA STARRED QUESTION NO. 276 ANSWER ON 07.08.2003 REGARDING EXPLOITATION OF NCES.

(a) & (b): A potential of over 80,000 MW power generation from non-conventional energy sources, i.e, wind, small hydro, biomass and solar has been estimated in the country. In addition, there is scope for setting up of a large number of decentralized systems, i.e., biogas plants, solar photovoltaic systems, solar water heaters, etc. The details of estimated potential in the country is given in Annexure-I and the State-wise potential for major programmes is given in Annexure-II.

(c): The State-wise achievements under various programmes as on 31.03.2003 are given in Annexure III.

(d): The Government is encouraging promotion, development and utilization of non-conventional energy sources by providing fiscal, financial and promotional incentives including financial support, term loans and conducive renewable energy power policies in States for wheeling, banking, buy-back and third party sale of renewable energy power.

Annexure-I

Annexure I referred to in reply parts (a)&(b) of Lok Sabha starred Question No. 276 for answer on 07-08-2003 regardingExploitation of Non-Conventional Energy Sources

Estimated Potential under Major Programmes

S. No.	Source/System	Estimated Potential
1.	Wind Power	45195 MW
2.	Small Hydro Power (up to 25 MW) -	
	Gross Potential	15,000 MW
	Identified Sites` Potential	10,324 MW
3.	Biomass Power/Biomass Gasifier	16,000 MW
	Bagasse Cogeneration Power	3,500 MW
4.	Energy from Wastes	2,700 MW
	Power from Renewables (Total)	82,395 MW
5	Solar Photovoltaic Power	20 MW/sq. km.
6.	Family-size Biogas plant (Nos.)	120 lakh
7	Solar Water Heating System	140 million sq. m. collector area

Sq. km. = Square Kilometer
Sq. m. = Square meter
MW = Mega-watt

State-wise Estimated Potential for major Non-conventional energy sources

Sl. No.	States/UTs	Wind Power (MW)	SHP# (MW)	Bagasse Cogeneration (MW)	Energy from Wastes (MSW) (Nos. in lakh)	Biogas Plants (Nos. in lakh)	Improved$ Chulha
1	Andhra Pradesh	8275	254.63	200	123	10.66	97.08
2	Arunachal Pr	0	1059.03	0	0	0.08	1.50
3	Assam	0	118.00	0	8	3.08	36.00
4	Bihar	0	194.02	200	62	9.40	133.93
5	Chhattisgarh	0	57.90	0	20		
6	Goa	0	2.60	0	0	0.08	1.40
7	Gujarat	9675	156.83	200	112	5.54	50.72
8	Haryana	0	30.05	0	23	3.00	20.90
9	Himachal Pr	0	1624.78	0	1	1.26	8.53
10	Jharkhand	0	170.05	0	10		
11	Jammu & Kashmir	0	1207.27	0	0	1.29	11.75
12	Karnataka	6620	652.61	300	151	6.80	60.76
13	Kerala	875	466.85	0	37	1.51	40.73
14	Madhya Pradesh	5500	336.32	0	92	14.91	101.58
15	Maharastra	3650	599.47	1000	287	8.97	96.50
16	Manipur	0	105.63	0	2	0.39	2.64
17	Meghalaya	0	181.50	0	2	0.24	2.54
18	Mizoram	0	190.32	0	2	0.03	0.73
19	Nagaland	0	181.39	0	0	0.07	2.01
20	Orissa	1700	156.76	0	22	6.05	54.55
21	Punjab	0	65.26	150	45	4.12	26.29
22	Rajasthan	5400	27.26	0	62	9.15	56.10
23	Sikkim	0	202.75	0	0	0.07	0.92
24	Tamil Nadu	3050	338.92	350	151	6.16	80.16
25	Tripura	0	9.85	0	2	0.29	4.65
26	Uttar Pradesh	0	267.06	1000	176	20.21	198.10
27	Uttaranchal	0	1478.24	0	5		
28	West Bengal	450	182.62	0	147	6.95	98.72
29	A & Nicobar	0	6.40	0	0	0.02	0.40
30	Chandigarh	0	0.00	0	6	0.14	0.66
31	D & N Haveli	0	0.00	0	0	0.02	0.25
32	Daman & Diu	0	0.00	0	0	0.00	0.10
33	Delhi	0	0.00	0	131	0.13	9.06
34	Lakshwadeep	0	0.00	0	0	0.00	0.10
35	Pondicherry	0	0.00	0	3	0.04	0.59
36	Common to all States@			100	1020		
	Total	45195	10324.37	3500	2700	120.63	1199.95

MW = Mega-watt,
SHP = Small Hydro Power
MSW = Municipal Solid Waste

$ the potential of Jharkhand, Chhattisgarh and Uttaranchal, included in Bihar, Madhya Pradesh and Uttar Pradesh respectively

@ For industrial waste under energy from waste programme
# Identified Sites` Potential

Note: Estimated potential only at country level available for biomass power and biomass gasifier.

Annexure-III

Annexure III referred to in reply parts (c) of Lok Sabha starred Question No. 276 for answer on 07-08-2003 regarding Exploitation of Non-Conventional Energy Sources

State-wise achievements made under various programmes as on 31.03.2003

Sl. No.	STATES/UT	Wind Power (MW)	SHP Power (MW)	Biomass Gasifier (MW)	Biomass Power from Wastes (kW)	Energy (MW)	Solar (kWp)
1	Andhra Pradesh	92.60	155.61	160.05	15384	11.95	275
2	Arunachal Pradesh	0.00	32.10	0.00	180		0
3	Assam	0.00	2.00	0.00	123		0
4	Bihar	0.00	44.90	0.00	20		0
5	Chhatisgarh	1.00	11.00		500		
6	Goa	0.00	0.05	0.00	22		0
7	Gujarat	173.10	7.00	0.50	11361	2.45	0
8	Haryana	0.00	48.30	4.00	964		0
9	Himachal Pradesh	0.00	93.24	0.00	7		0
10	Jammu & Kashmir	0.00	102.24	0.00	120		0
11	Jharkhand	4.05	0.00	0			0
12	Karnataka	124.30	182.38	109.38	4499	1.00	30
13	Kerala	2.00	69.52	0.00	725		25
14	Madhya Pradesh	22.60	38.96	0.00	4529	2.70	339
15	Maharashtra	401.20	206.33	24.50	3823	1.90	185
16	Manipur	0.00	5.45	0.00	0		0
17	Meghalaya	0.00	30.71	0.00	0		0
18	Mizoram	0.00	14.76	0.00	200		0
19	Nagaland	0.00	20.47	0.00	0		0
20	Orissa	0.00	7.30	0.00	72		0
21	Punjab	0.00	107.40	22.00	700	0.75	250
22	Rajasthan	60.70	23.85	0.00	218		50
23	Sikkim	0.00	35.60	0.00	0		0
24	Tamil Nadu	990.30	76.40	106.00	2653	1.98	211
25	Tripura	0.00	16.01	0.00	1000		0
26	Uttar Pradesh	0.00	21.50	46.50	2746	3.00	325
27	Uttaranchal	64.60	0				
28	West Bengal	1.10	92.28	0.00	2965		50
29	Andaman & Nicobar	0.00	5.25	0.00	167		50
30	Chandigarh	0.00	0.00	0.00	0		50
31	Dadar & Nagar Haveli	0.00	0.00	0.00	0		0
32	Daman & Diu	0.00	0.00	0.00	0		0
33	Delhi	0.00	0.00	0.00	74		0
34	Lakshwadeep	0.00	0.00	0.00	0		650
35	Pondicherry	0.00	0.00	0.00	0		0
36	Others	1.60	0.00	0.00	318		0
	Total	1869.50	1509.24	483.93	53370	25.73	2490

SHP = Small Hydro Power;
U&I = Urban and Industrial Wastes Programme;
MW = Mega Watt;
kWp = kilowatt peak;

Annexure III referred to in reply parts (c) of Lok Sabha starred Question No. 276 for answer on 07-08-2003 regarding Exploitation of Non-Conventional Energy Sources

State-wise achievements made under various programmes as on 31.03.2003

Sl. No.	STATES/UT	Biogas Plants	IBP/CBP NBP	Water Pumping WIND MILLS	Aerogen. Hybrid System

	(Nos.)	(Nos.)	(Nos)	(kW)	
1	Andhra Pradesh	354334	132	5	16
2	Arunachal Pradesh	1721	0	0	0
3	Assam	53769	2	3	6
4	Bihar	123963	40	42	0
5	Chhatisgarh	8078	8		
6	Goa	3428	21	0	14.7
7	Gujarat	359047	165	432	0
8	Haryana	45414	59	0	0
9	Himachal Pradesh	44194	8	0	0
10	Jammu & Kashmir	2013	4	0	0
11	Jharkhand	925	4		
12	Karnataka	365243	63	20	7.75
13	Kerala	90823	163	79	8
14	Madhya Pradesh	216970	120	0	0
15	Maharashtra	687657	484	26	123.14
16	Manipur	2026	4	0	0
17	Meghalaya	2671	4	0	0
18	Mizoram	3015	0	0	0
19	Nagaland	1792	7	0	0
20	Orissa	198692	45	0	0
21	Punjab	72279	668	0	0
22	Rajasthan	66735	71	222	4
23	Sikkim	4125	0	0	10
24	Tamil Nadu	203808	289	52	24.5
25	Tripura	2069	0	0	0
26	Uttar Pradesh	382784	1366	0	0
27	Uttaranchal	2912	49		
28	West Bengal	220969	68	0	0
29	Andaman & Nicobar	137	0	2	0
30	Chandigarh	97	0	0	0
31	Dadar & Nagar Haveli	169	0	0	0
32	Daman & Diu	0	0	0	0
33	Delhi	676	56	0	0
34	Lakshwadeep	0	0	0	0
35	Pondicherry	573	1	0	5
36	Others	0	0	0	0
	Total	3523108	3901	883	219.09

IBP/CBP/NBP = Institutional/Community/Night Soil based Biogas Plants;
IREP = Integrated Rural Energy Programme;
Kw = Kilowatt

Annexure III referred to in reply parts (c) of Lok Sabha starred Question No. 276 for answer on 07-08-2003 regarding Exploitation of Non-Conventional Energy Sources

State-wise achievements made under various programmes as on 31.03.2003

Sl. No.	STATES/UT As on 31.3.2003	SOLAR PHOTOVOLTAIC SLS	HLS	SL	PP (Nos)	SPV Solar Pumps (Nos)	Cooker
1	Andhra Pradesh	3648	1161	32152	21.656	603	11985
2	Arunachal Pradesh	738	750	4937	7.9	0	530
3	Assam	98	2787	541	7.5	45	80
4	Bihar	490	679	28275	0	128	450
5	Chhatisgarh	1237	3612	3192	0	5	37000
6	Goa	69	51	443	1.72	15	1500
7	Gujarat	1764	2552	31603	24.9	42	70410
8	Haryana	612	9666	32727	24.2	270	20615
9	Himachal Pradesh	1494	11948	20697	1.5	6	27280
10	Jammu & Kashmir	389	15317	9202	40	18	345
11	Jharkhand	135	102	16374	0	3	280
12	Karnataka	1009	6135	7334	18.91	337	250
13	Kerala	1090	18679	39681	44.7	749	195
14	Madhya Pradesh	5714	159	8564	22.4	76	141600
15	Maharashtra	3388	721	8683	6.44	189	56635

16	Manipur	370	650	3883	11	12	365
17	Meghalaya	593	540	4875	42	5	1165
18	Mizoram	315	1645	5812	0	37	110
19	Nagaland	271	143	95	6	0	0
20	Orissa	5665	2937	8795	36.52	4	3170
21	Punjab	1766	2870	14995	46	1580	22050
22	Rajasthan	6473	34864	4716	25.8	268	36600
23	Sikkim	271	143	95	6	0	20
24	Tamil Nadu	2272	471	12818	26	760	1355
25	Tripura	760	2238	20805	24.57	10	80
26	Uttar Pradesh	550	50938	52815	129.2	229	45310
27	Uttaranchal	250	32204	27027	80.03	9	7090
28	West Bengal	1461	26890	3662	475	48	7930
29	Andaman & Nicobar	358	405	796	167	25	60
30	Chandigarh	0	275	1675	0	14	1525
31	Dadar & Nagar Haveli	0	0	0	0	1	80
32	Daman & Diu	0	0	0	0	0	0
33	Delhi	301	0	4753	15	84	27990
34	Lakshwadeep	0	0	0	85	0	0
35	Pondicherry	62	13	637	0	21	90
36	Others	0	3295	28197	0	18	16685
	Total	43613	234840	440856	1396.946	5611	540830

SLS = Street Lighting System;
HLS = Home Lighting System;
SL = Solar Lanterns;
PP = Power Plants;
SPV = Solar Photovoltaic